INTERNAL WORKING DOCUMENT NO. 86-16

FIELD TESTING VARIOUS SEEDLING CONTAINER TYPES IN NEW BRUNSWICK

forests mines energy / forêts mines énergie

DEPARTMENT OF FORESTS, MINES AND ENERGY
TIMBER MANAGEMENT BRANCH
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BACKGROUND

Over the past decade the original system of reforestation utilizing bare root stock has, in large part, given way to containerized systems in the Crown land planting program in New Brunswick.

This trial (initiated by the New Brunswick Forest Research Advisory Committee in 1983) is being conducted to determine the relative success of various container types on a variety of scarified sites which includes full tree logging sites.

The Department of Forests, Mines and Energy (formerly Natural Resources) supplied the seed for the tests and the seed and seedlings originate from the same seed lots. Species being tested are black spruce, white spruce and jack pine.

CONTAINER TYPES BEING TESTED

1. 408 paper pots
2. 508 wear pots
3. Can-Am 1
4. Can-Am 2
5. Can-Am 3
6. Styroblock 2
7. Styroblock 4
8. Styroblock 8
9. Styroblock 20

10. Spencer Lemaire 5
11. Combicel
12. Low Density Poly

plus

Bare root stock as a control

EXPERIMENTAL DESIGN (ref. SAMPLES APPENDIX I, II, III)

White and black spruce - 9x9 and 10x10 Latin square design - each with 16 replicates.

Jack pine - 6x6 Latin square design - each with 16 replicates.

STOCK AND LOCATION (ref. attached map APPENDIX IV)

Species	Location	Map Ref. No.	Site Preparation	Design
1983-1984 (Planted spring & fall 1983 plus spring 1984 by Canadian Forestry Service)				
bS	Bronson	1	Crusher	9x9
bS	Bartibog	2	C&H Plow	9x9
bS	Acadia	3	Marden Roller	9x9
wS	Green River	4	Full tree logging	9x9
wS	Clearwater	5	Fire	9x9
wS	Shepody Road	6	Crusher	9x9
1984 (Fall Planted by CFS)				
jP	Burntland Bk	7	Marden Roller	6x6
jP	Victoria Lake	8	-	6x6
1985 (Spring Planted by CFS)				
jP	Victoria Lake	9	-	6x6
jP	Burntland Bk	10	Marden Roller	6x6

STOCK AND LOCATION (continued)

1985 (Planted Spring and Summer by DFME)

bS	Green River	11	Bracke	10x10
bS	St. Arthur	12	Shark fin Barrels	10x10
bS	Mount Pleasant	13	Full tree logging	10x10
wS	Green River	14	Bracke	10x10
wS	Shepody Road	15	Shark fin Barrels	10x10
wS	Mullin Stream	16	Full tree logging	10x10

DATA COLLECTION

a) Samples of some planting stock were destructively sampled coinciding with planting dates to determine shoot/root ratios. Some of the 1983 containers were not sampled by CFS (reason?) and some of the 1985 data was lost due to an accident (fire) in the laboratory.

b) Survival and heights were recorded in fall 1984 for plantations planted prior to summer 1984 (Table 1).

c) In 1985 not all original white and black spruce containers were available as planned due to technical difficulties. Some substitution of other container types was necessary.

RESULTS TO DATE

a) Containers exhibit better survival than bare root stock (ref. Table 1)

b) No height comparisons have been made due to differences in planting dates and the fact that the first height measurements were not recorded until fall 1984 (ref. Table 1).

c) Erratic survival percentages at Clearwater (ref. Clearwater-Table 1) have been attributed to damage as a result of herbicide (Roundup) application following planting.

FUTURE PLANS

a) Monitor survival and height data -

   i) 1984-85 jack pine at Victoria Lake and Burntland Bk.

   ii) 1985 black and white spruce

   iii) 1983-1984 black and white spruce

b) Herbicide areas in conjunction with regular annual program.

c) Prepare progress reports - Third year Survival and Heights, etc.

Table 1. Field testing various container types.

SURVIVAL AND HEIGHTS AFTER 1984 GROWING SEASON

	WHITE SPRUCE									BLACK SPRUCE								
	SHEPODY ROAD			CLEARWATER			GREEN RIVER			BARTIBOG			ACADIA			BRONSON		
Container	HT[1]	SURV[2]	EST. DATE[3]	HT	SURV	EST. DATE	HT	SURV	EST. DATE	HT	SURV	EST. DATE	HT	SURV	EST. DATE	HT	SURV	EST. DATE
Styro 4 (Styroblock)	23.3	97.2	23/6/83	17.6	61.8	22/6/83	29.6	96.5	21/6/83	41.3	93.8	13/6/83	35.1	97.9	14/6/83	34.5	89.6	13/6/83
Styro 2 (Styroblock)	18.8	95.1	23/6/83	14.0	55.6	22/6/83	23.9	97.9	21/6/83	38.3	92.4	13/6/83	32.9	90.3	14/6/83	29.7	86.8	13/6/83
50BWP (WeatPot)	20.3	97.9	8/8/83	18.3	90.3	5/8/83	26.6	96.5	3/8/83	19.0	91.7	14/6/84	17.0	88.9	14/6/84	19.4	88.2	14/6/84
CA-2 (Can-Am)	23.5	95.1	23/6/83	16.3	69.4	22/6/83	27.1	97.9	21/6/83	38.2	90.3	13/6/83	35.3	95.8	14/6/83	32.8	88.9	13/6/83
400 PP (PaperPot)	18.2	91.7	23/6/83	15.0	58.3	22/6/83	24.5	95.8	21/6/83	34.0	77.8	13/6/83	30.0	90.3	14/6/83	29.5	95.8	13/6/83
SL-5 (Spencer Lemaire)	22.1	93.8	23/6/83	15.7	49.3	22/6/83	28.0	97.2	21/6/83	38.7	93.1	13/6/83	34.1	91.0	14/6/83	32.9	95.8	13/6/83
CA-3 (Can Am)	25.1	93.8	8/8/83	22.9	92.4	5/8/83	31.2	97.2	3/8/83	47.8	96.9	27/7/83	39.8	95.1	29/7/83	40.4	95.1	30/7/83
Styro 8 (Styroblock)	24.9	97.7	8/8/83	22.7	93.8	5/8/83	30.4	100.0	3/8/83	49.4	100.0	27/7/83	41.4	95.8	29/7/83	40.3	97.2	30/7/83
BR (BareRoot)	23.5	40.3	8/5/84	19.8	25.0	22/5/84	20.9	52.8	23/5/84	35.0	72.9	31/5/83	33.5	75.0	31/5/83	33.2	77.1	30/5/83

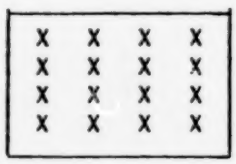
1. Height in Cm.
2. Survival in %
3. Establishment Date (Planting Date)

APPENDIX I

BLACK AND WHITE SPRUCE PLANTATIONS ESTABLISHED IN SPRING AND FALL
1983 PLUS SPRING 1984
9 RANDOM BLOCKS REPLICATED 9 TIMES - (0.6 Ha)

STYRO 4	408 PAPER POT	STYRO 4	BARE ROOT	SPENCER LEMAIRE 5	CAN-AM 3	508 WEAR POT	CAN-AM 2	STYRO 2
STYRO 2	STYRO 4	SPENCER LEMAIRE 5	CAN-AM 2	BARE ROOT	508 WEAR POT	CAN-AM 3	STYRO 8	408 PAPER POT
508 WEAR POT	BARE ROOT	CAN-AM 2	STYRO 2	STYRO 4	STYRO 8	408 PAPER POT	SPENCER LEMAIRE 5	CAN-AM 3
CAN-AM 2	SPENCER LEMAIRE 5	508 WEAR POT	408 PAPER POT	STYRO 8	STYRO 2	STYRO	CAN-AM 3	BARE ROOT
408 PAPER POT	CAN-AM 3	STYRO 4	STYRO 8	STYRO 2	CAN-AM 2	BARE ROOT	508 WEAR POT	SPENCER LEMAIRE 5
SPENCER LEMAIRE 5	STYRO 8	408 PAPER POT	CAN-AM 3	508 WEAR POT	BARE ROOT	CAN-AM 2	STYRO 2	STYRO 4
CAN-AM 3	STYRO 2	BARE ROOT	SPENCER LEMAIRE 5	CAN-AM 2	STYRO 4	STYRO 8	408 WEAR POT	508 WEAR POT
STYRO 8	508 WEAR POT	CAN-AM 3	STYRO 4	408 PAPER POT	SPENCER LEMAIRE 5	STYRO 2	BARE ROOT	CAN-AM 2
BARE ROOT	CAN-AM 2	STYRO 2	508 WEAR POT	CAN-AM 3	408 PAPER POT	SPENCER LEMAIRE 5	STYRO 4	STYRO 8

9 REPLICATES/PLANTATION
16 TREES/REPLICATE
SPACING = 2 M
1 296 TREES/PLANTATION



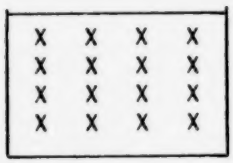
APPENDIX II

JACK PINE PLANTATIONS ESTABLISHED IN FALL 1984 - SPRING 1985

6 RANDOM BLOCKS REPLICATED 6 TIMES - (0.3 Ha)

STYRO 4	408 PAPER POT	STYRO 2	LOW DENSITY POLY	CAN-AM 1	BARE ROOT
CAN-AM 1	BARE ROOT	STYRO 4	STYRO 2	LOW DENSITY POLY	408 PAPER POT
STYRO 2	LOW DENSITY POLY	BARE ROOT	CAN-AM 1	408 PAPER POT	STYRO 4
BARE ROOT	CAN-AM 1	408 PAPER POT	STYRO 4	STYRO 2	LOW DENSITY POLY
408 PAPER POT	STYRO 2	LOW DENSITY POLY	BARE ROOT	STYRO 4	CAN-AM 1
LOW DENSITY POLY	STYRO 4	CAN-AM 1	408 PAPER POT	BARE ROOT	STYRO 2

6 REPLICATES/PLANTATION
16 TREES/REPLICATE
SPACING = 2 M
576 TREES/PLANTATION



APPENDIX III

BLACK AND WHITE SPRUCE PLANTATIONS ESTABLISHED IN
SPRING AND SUMMER 1985
10 RANDOM BLOCKS REPLICATED 10 TIMES - (0.7 Ha)

STYRO 20	408 PAPER POT	CAN-AM 2	BARE ROOT	508 WEAR POT	STYRO 2	STYRO 8	CAN-AM 3	SPENCER LEMAIRE 5	STYRO 4
STYRO 2	STYRO 4	BARE ROOT	STYRO 20	CAN-AM 2	STYRO 8	CAN-AM 3	508 WEAR POT	408 PAPER POT	SPENCER LEMAIRE 5
408 PAPER POT	STYRO 20	SPENCER LEMAIRE 5	STYRO 4	STYRO 8	508 WEAR POT	BARE ROOT	STYRO 2	CAN-AM 2	CAN-AM 3
CAN-AM 2	SPENCER LEMAIRE 5	CAN-AM 3	STYRO 8	STYRO 2	STYRO 20	STYRO 4	408 PAPER POT	BARE ROOT	508 WEAR POT
TYRO 4	STYRO 2	STYRO 20	SPENCER LEMAIRE 5	CAN-AM 3	CAN-AM 2	508 WEAR POT	BARE ROOT	STYRO 8	508 WEAR POT
PENCER EMAIRE 5	CAN-AM 2	508 WEAR POT	408 PAPER POT	STYRO 20	STYRO 4	STYRO 2	STYRO 8	CAN-AM 3	BARE ROOT
BARE ROOT	508 WEAR POT	STYRO 4	STYRO 2	408 PAPER POT	CAN-AM 3	SPENCER LEMAIRE 5	CAN-AM 2	STYRO 20	STYRO 8
508 WEAR POT	STYRO 8	408 PAPER POT	CAN-AM 3	BARE ROOT	SPENCER LEMAIRE 5	CAN-AM 2	STYRO 20	STYRO 4	STYRO 2
AN-AM 3	BARE ROOT	STYRO 8	508 WEAR POT	STYRO 4	408 PAPER POT	STYRO 20	SPENCER LEMAIRE 5	STYRO 2	CAN-AM 2
TYRO 8	CAN-AM 3	STYRO 2	CAN-AM 2	SPENCER LEMAIRE 5	BARE ROOT	408 PAPER POT	STYRO 4	508 WEAR POT	STYRO 20

) REPLICATES/PLANTATION
5 TREES/REPLICATE
PACING = 2 M
600 TREES/PLANTATION

X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X

APPENDIX IV

CONTAINER TRIAL LOCATIONS

CROWN LAND LICENSES